



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
REPORT OF EXAMINATION
Groundwater Right
WRTS File #: G2-29340

PRIORITY DATE	APPLICATION NO.	PERMIT NO.	CERTIFICATE NO.
January 16, 1996	G2-29340		

NAME	Steamboat Square		
ADDRESS/STREET	CITY/STATE	ZIP CODE	
6541 Sexton Dr. NW	Olympia	98502	

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
3 Wells
TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE FEET PER YEAR
	68	25
QUANTITY, TYPE OF USE, PERIOD OF USE		
25 Acre-feet per year	Domestic supply and commercial use	Year-round, as needed

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL

Well 1 (Tag#AHF153) 1509 feet South and 2,079 feet West from the NE Corner of Section 2, T. 18 N., R. 3 W.W.M.
Well 2 (Tag#AHF152) 1548 feet South and 2,099 feet West from the NE Corner of Section 2, T. 18 N., R. 3 W.W.M.
Well 3 (Tag#AHF151) 1522 feet South and 2,114 feet West from the NE Corner of Section 2, T. 18 N., R. 3 W.W.M.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP	RANGE [E. or W.] W.M.	WRIA	COUNTY
SW ¼ NE ¼	2	18 N.	3 E.	14	Thurston
PARCEL NUMBER	LATITUDE	LONGITUDE	DATUM		

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
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LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

[Attachment 1 shows location of the authorized place of use and point(s) of diversion or withdrawal]

Lots 1, 2 and 3 of the Sexton Subdivision as recorded in Volume 12 of Plats, Page 54

DESCRIPTION OF PROPOSED WORKS

Well 1 is 6 inches and 95 feet deep
Well 2 is 6 inches and 97 feet deep
Well 3 is 6 inches and 101 feet deep

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE	COMPLETE PROJECT BY THIS DATE	WATER PUT TO FULL USE BY THIS DATE
Started	August 1, 2016	August 1, 2017

PROVISIONS

Prior to any new construction or alterations of a public water supply system, the State Board of Health rules require public water supply owners to obtain written approval from the Office of Drinking Water of the Washington State Department of Health. Please contact the Office of Drinking Water at add regionally appropriate address prior to beginning (or modifying) your project Southwest Drinking Water Operations, 2411 Pacific Avenue, PO Box 47823, Olympia, WA 98504-7823, (360) 664-0768.

An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", Chapter 173-173 WAC.

Water use data shall be recorded annually and maintained by the property owner for a minimum of five years, and shall be promptly submitted to Ecology upon request.

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

The applicant is advised that notice of Proof of Appropriation of water (under which the final certificate of water right is issued) should not be filed until the permanent distribution system has been constructed and that quantity of water allocated by the permit to the extent water is required, has been put to full beneficial use.

The subject wells have been tagged with well identification numbers. These unique well numbers shall remain attached to the wells, please reference these numbers when submitting data.

The Water Quality Monitoring data shall include the following elements:

1. Unique Well ID Number
2. Sampling date and time
3. Chloride concentration (mg/L)
4. Submit paper copy of laboratory report

In order to help protect your water right from potential future impairment by junior water users, it is important that a record be established of accurate water-level measurements for your well. As such, it is recommended that you measure and record the water level in your well quarterly, using a consistent methodology. This information will be most useful if these measurements are taken after your well has returned to a static (recovered aquifer) condition. In the absence of this, then next best option is to maintain consistency regarding the length of the pumping and recovery period prior to each measurement. For maximum usefulness, data collected should include the following elements:

1. Unique Well ID Number
2. Description of the measuring point (top of casing, sounding tube, etc.)
3. Measuring point elevation above or below land surface to the nearest 0.1 foot
4. Land surface elevation at the well head to the nearest foot
5. Measurement date and time
6. Measurement method (air line, electric tape, pressure transducer, etc.)
7. Well status (pumping, recently pumped, etc.)
8. Water level accuracy (to nearest foot, tenth of foot, etc.)
9. Depth to static water level below measuring point to the nearest 0.1 foot.

The following information shall be included with each submittal of water use data: owner, contact name if different, mailing address, daytime phone number, WRIA, Permit No., source name, annual quantity used including units, maximum rate of diversion including units, monthly meter readings including units, Department of Health WFI water system number and source number(s), purpose of use, well tag number and period of use. In the future, Ecology may require additional parameters to be reported or more frequent reporting. Ecology prefers web based data entry, but does accept hard copies. Ecology will provide forms and electronic data entry information.

REPORTED BY: 

Date: 4/11/07

NDINGS OF FACT AND DECISION

Upon reviewing the attached report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I find water is available for appropriation and the appropriation as recommended is a beneficial use and will not be detrimental to existing rights or the public welfare.

Therefore, I ORDER a permit be issued under Ground Water Application Number G2-29340, subject to existing rights and indicated provisions, to allow appropriation of public ground water for the amount and uses specified in the foregoing report.

Signed at Olympia, Washington, this 11th day of April, 2007.

Phil Crane
for Thomas Loranger
Water Resources Section Manager
Southwest Regional Office

Report on Water Right Application No. G2-29340 for the Steamboat Square Water System

Tammy Hall, LHG Department of Ecology

BACKGROUND:

On January 16, 1996, Ed W. Makoviney filed an application to withdraw public groundwater at a rate of 90 gallons per minute (gpm) for multiple domestic and commercial supply. On January 18, 2006, this application was assigned to Steamboat Square, L.L.C. The project site is located in the Kennedy/Goldsborough Water Resources Inventory Area (WRIA) 14.

Public notice was published on September 15 and September 22, 2005. No letters of protest were received.

Based on the provisions of Chapters 90.03 and 90.44 Revised Code of Washington (RCW), I recommend approval of this application.

INVESTIGATION:

The Steamboat Square property consists of a 5 parcels of property totaling 5.33 acres in southwest Thurston County, the NE quarter of Section 2 of T18N, R3W (Attachment 1). The project site is located west of the WRIA 13/WRIA 14 boundary, near the southeastern edge of the Griffin Peninsula. The Griffin Peninsula lies between Totten Inlet and Eld Inlet and is bounded to the south by bedrock hills composed of basalt. The peninsula is generally broad and flat, measuring approximately 6 miles long by 2 ½ miles wide at the widest point and terminates in steep bluffs to Puget Sound. The site is located on property that is approximately 1,500 feet west of the western shore of Eld Inlet on the southern-most portion of Schneider Prairie, just off U.S. 101.

The intent of the application is to secure water rights for residential domestic supply and commercial supply. It is anticipated that with planned improvements to the system and the potential for consolidation of other nearby exempt well water systems, the Steamboat Square water system may be able to increase its service and eventually become qualified as a municipal system.

The Steamboat Square water system is designated by Department of Health (DOH) as a Group A non-community (non-municipal) water system approved to serve 10 connections. Currently the system serves three commercial buildings and two residences from 3 wells. The system is identified in (DOH) database, Sentry (<http://www4.doh.wa.gov/sentryinternet/Intro.aspx>), as Steamboat Square, Water System ID-00519.

In considering this application, my investigation included, but was not limited to research and/or review of:

- The State Water Code.
- SEPA Requirements.
- Records of other water rights in the vicinity.
- Information provided with the application.
- Appropriate maps and other reference material.
- A site visit conducted June 22, 2006.
- Hydrogeologic memorandum written by Tammy Hall, licensed hydrogeologist, with Water Resources Southwest Regional Office, dated February 8, 2007.

General Area Hydrogeology

The project area is underlain by unconsolidated glacial deposits of Quaternary age. The lateral extent of these units was governed by the extent of the four glacial advances and retreats that occurred during the Pleistocene and younger alluvial deposits of Holocene age (Drost, 1998). Information in Drost (1998) indicates that five primary hydrologic units have been identified based on drillers logs for wells in Thurston County. Information indicates a considerable variation in composition and thickness of units and all may not necessarily be present throughout the county. In the project area, it is likely that only two unconsolidated units are present. These units are underlain by Lower Eocene age volcanic rocks which form the bedrock uplands to the south.

The Qvt is the hydrologic unit exposed at the ground surface in the project area. The Qvt is composed of Vashon-age till, and possibly some older tills. The unit is considered a poor source of water, although water producing zones can support some single domestic wells. The unit is generally between 25 and 50 feet in thickness but locally may be as thick as 150 feet (Drost, 1998).

Vashon advance outwash (Qva) underlies the Qvt. Information in Logan and Walsh (2004) indicates a thickness of approximately 35 to 40 feet in the project area. The top of the Qva generally occurs between 50 and 200 feet above sea level. Most wells in the subject area draw water from the Qva. Groundwater in this unit is typically under confined conditions (Drost, 1998).

Underlying the Qva is the Crescent Formation, or Tb. The Crescent Formation is a lower to middle Eocene age basalt that forms the bedrock hills that extend south of the Steamboat Square property to the Black Hills Capitol State Forest in the southwestern part of Thurston County. In general, the Tb is a poor source of water and many wells drilled into this unit have been subsequently abandoned because of poor yields; however, small quantities of water exist in fractures and joints near the top of the unit. Where Tb is exposed at the surface, groundwater occurs under water table conditions. Where the Tb underlies the glacial deposits, especially silts and clays, conditions are typically confined (Drost, 1998).

Horizontal flow directions of groundwater within aquifers are from areas of higher head to areas of lower head. Groundwater generally moves toward marine water bodies and surface drainage channels. Information in Drost (1998) indicates that groundwater flow in the area originates from the exposed bedrock along the southern margin of the Griffin Peninsula, which serves as a recharge area, and flows radially outward towards Eld Inlet. The Steamboat Square property is located in an area where groundwater discharges directly to Eld Inlet. Recharge to all aquifers is by precipitation and vertical leakage.

Hydrologic Analysis

The Steamboat Square property is located approximately ¼ mile west of Eld Inlet (See Attachment 1). The project area is flat with an approximate surface elevation of 164 feet above msl. The hydrogeologic unit exposed at the ground surface in the project area is the Qvt (Drost, 1998).

The Steamboat Square Water System consists of three wells located in close proximity and completed at similar depths. All wells are metered and each is equipped with 1 ½ h.p. pump.

A well report for Well 1 was provided by the applicant. Well 1 was drilled in 1963, is 6 inches in diameter and completed at a depth of 95 feet below ground surface (bgs). The report describes drilling through a thin layer of surface soils followed by layers of sand clay, compacted gravel, and cemented gravel (glacial till, Qvt) to a depth of 80 feet below ground surface (bgs). The well is perforated from 89 to 93 feet bgs completed in a water bearing gravel layer (Qva). The well report indicates at static water level of 78 feet bgs, measured after drilling. A bailer test indicates a capacity of 23 gpm.

A well report is not available for Well 2, but a notation at the bottom of the well report for Well 1 states the following: "2nd well 1964 97 feet (deep) STATIC 78 feet."

Well 3 was drilled in 1992 to a completed depth of 101 feet bgs. Well 3 is 6 inches in diameter and is open at the bottom of the well casing with no screens or perforations. The well report describes drilling through layers of fine sand, compacted sand and gravel, and sandy clay with gravel to a depth of 92 feet bgs. The well is bottomed in a water-bearing gravel layer from 92 to 101 feet bgs (Qva). Well 3 has a static water level of 75 feet bgs, measured after drilling. A bailer test on Well 3 indicated a capacity of 35 gpm. DOH records indicate Well 3 is used primarily for standby.

A pump test was conducted on October 27, 2006 (Semcon, Inc., 2006b). The results of the pump test indicate that Wells 1 and 2 each have a capacity of 24 gpm and can be pumped simultaneously for a combined yield of 48 gpm on a sustainable basis. The data gathered indicate Well 2 has a specific capacity of 2.2 gpm per foot of drawdown, whereas Well 1 has a specific capacity of 4 gpm per foot of drawdown. Based on this information, Well 1 has a likely maximum capacity of 68 gpm on a short term basis. Well 3 was used as an observation well during the test.

Information in Drost (1998) indicates that groundwater flow in the general area of the Steamboat Square property flows eastward to Eld Inlet. Groundwater intercepted by the Steamboat Square wells is groundwater that would otherwise discharge to marine water within ¼ mile.

Water Demand

Semcon, Inc. (2006a) addressed the project needs in correspondence dated August 28, 2006. The plan concept for development calls for the removal of the three smallest buildings on Lot 1 and construction of seven new commercial buildings.

The types of businesses that will occupy the buildings are unknown at this time; however, for the purposes of obtaining an estimate of water demand, Semcon selected typical uses for a rural commercial center. To ensure a representative estimate, commercial uses included a restaurant, beauty salon, self-service laundry, day care, and office/professional space.

Water use quantities were taken from the DOH's Water System Design Manual (2001) for an assumed set of uses that represent a range of intensities. Actual uses will be determined within limits of the application and permit, as the project is completed and the water right is perfected. The peak capacity was estimated based the number of fixtures in each establishment and applying the appropriate peak rate per fixture. The amount of 270 gpm represents the total maximum capacity (excluding fire flow) required if all of the users simultaneously needed maximum water flows. All or part of the peak capacity can be supplied by storage as long as the sources are available to refill the storage at an off-peak time. The projected daily use of 22,350 gallons is equivalent to 25 ac-ft per year.

Based on pump test information, the sustainable yield of all three wells is 48 gpm, however 68 gpm can be achieved for short periods of time, if necessary. The water system will be required to have an adequate storage capacity to meet peak needs in excess of what the system's instantaneous pumping capacity.

Neighboring Water Users

The area surrounding the Steamboat Square service area consists of semi-rural to rural residential and commercial development. The areas surrounding the Steamboat Square property is served primarily by small public water supply systems. The highest concentration of residential development is close to the shore line.

Using aquifer characteristics given in Drost (1998), the pumping radius of influence of the Steamboat Square wells is approximately 800 feet. Wells within this distance and sited in the Qva, the same aquifer as the Steamboat Square wells, will likely experience interference drawdown when the Steamboat Square wells are being pumped. Wells located in the Qva outside the 800 foot radius should not be affected. Wells screened in different aquifers should not be affected, even within this radius.

Ecology's databases were queried to determine the number of water right certificates, permits, claims, and well reports that range in distance from approximately 1,800 feet to the northwest and 4,200 feet to the southeast from the Steamboat Square wells. The radius was chosen using several criteria, including the ease of records retrieval, physiographic characteristics of the area, the assumption that groundwater flow generally mimics surface topography, and an estimated radius of influence of 800 feet.

The nearest authorized withdrawal to the Steamboat Square wells is a permit issued to Griffin School District (G2-28993) for 70 gpm and 10 ac-ft per year for domestic supply for the Griffin School and irrigation of 4 acres of play fields. The permit is the only authorized withdrawal that lies within the predicted zone of influence of pumping. This permit was issued on January 10, 2006 and has a priority date of January 27, 1994. The Griffin School well is situated approximately 800 feet northeast of the Steamboat Square wells. The school well is completed at a depth of approximately 118 feet bgs and in the Qva. Information regarding groundwater flow (Drost, 1998) indicates that the Steamboat Square wells and the Griffin School well are situated cross-gradient from each other. Because the school's well is located in the outer limit of the radius of influence of pumping, if it were to be affected by pumping from the Steamboat Square wells, impacts would be minimal. Information on the Griffin School well indicates that the well has adequate available drawdown that would easily be able to compensate for any potential impacts.

Following is a summary of the remaining certificates, claims, and well reports that are situated within the area queried. Because these withdrawals lie outside the estimated radius of influence of 800 feet, they should not be affected by withdrawals from the Steamboat Square wells. Due to the physiography of the area, many withdrawals are either upgradient or cross gradient of the Steamboat Square wells and intercept groundwater discharging to marine water.

- Six groundwater certificates have been issued which authorize a total of 210 gpm and 56.7 ac-ft per year. The purpose of use is for domestic supply and commercial supply. Well logs are not available for all wells associated with each certificate, however, information available indicates the wells are likely sited in the Qva (Drost, 1998).
- Twelve surface water certificates have been issued authorizing the diversion of 0.49 cubic feet per second (cfs) and 38.67 ac-ft per year. Water is used for domestic supply, irrigation, commercial, and fire suppression. The sources listed are Schneider Creek, unnamed streams, Silver Springs, and unnamed springs.
- Thirty-three claims have been filed for domestic use, stockwater, and irrigation from surface water sources and wells.
- Ecology's well log database indicates that approximately 34 wells have been drilled in the area surrounding the Steamboat Square wells. These wells range in depth from 72 feet to 720 feet bgs. Because the development surrounding the Steamboat Square wells is within the designated place of use for the water system or is supplied by other small public water systems, it is unlikely that few, if any, private wells lie within the area of pumping influence. The physiography of the area indicate that most wells in close proximity are either upgradient or cross-gradient from the Steamboat Square wells and intercept water that is directly discharging to marine water.

Effects to Surface Water

Schneider Creek is located approximately ¼ mile northwest of the Steamboat Square wells. The creek originates in the bedrock hills to the southwest and flows northeasterly until it crosses U.S. 101, then turns sharply westward and empties into Totten Inlet.

Minimum instream flows were established in 1988 through WAC 173-514, the Instream Resources Protection Program (IRPP) for the Kennedy-Goldsborough Water Resource Inventory Area (WRIA) 14. Flows established in this WAC are considered an appropriation and senior to all permits approved after 1988 and subsequent water right applications. This IRPP closes Schneider Creek from May 1 to October 31 each year to groundwater withdrawals that would harmfully impact instream values. Future groundwater withdrawals are affected by this closure if the proposed withdrawal will negatively impact flows in the stream.

The Steamboat Square wells are located approximately ¼ mile northwest from Eld Inlet. Information in Drost indicates that groundwater in the area flows in a general eastward direction and discharges to Eld Inlet. The Steamboat Square wells intercept groundwater that would otherwise discharge directly to marine water and, as such, will not affect flows in Schneider Creek or other regulated surface water in WRIA 14.

Seawater Intrusion in Thurston County

In general, chloride concentrations in Thurston County are relatively low, although small pockets of seawater intrusion occurs in localized areas. Withdrawals from wells in close proximity to marine water, such as the Steamboat Square wells, have the potential to be at risk of seawater intrusion, especially if the static water level of the well is near sea level. The easiest way to reduce the likelihood of seawater intrusion in areas at potential risk is to keep pumping rates low so a pronounced cone of depression that draws up salt water does not develop.

Analytical data in Drost (1998) lists chloride concentrations for the Griffin School well, located approximately 800 feet northeast of the Steamboat Square wells, and completed in the Qva. A sample collected in 1989 measured a chloride concentration of 5.7 milligrams per liter (mg/l). Analytical data collected in 1989 from 2 other wells in close proximity to the Steamboat Square wells had chloride concentrations of less than 6 mg/l (completed in the Qva) and 3.4 mg/l for one well completed in a deeper geohydrologic unit. The Maximum Contaminant Level (MCL) allowed according to Federal standards for chloride is 250 mg/l.

Because of Steamboat Square wells are located relatively near marine water (¼ mile), there is a potential risk for seawater intrusion at this location. The system operator should take mitigative measures to reduce the likelihood of capturing seawater, such as keeping pumping rates low so that a pronounced cone of depression does not develop. To help monitor water quality, it is suggested that the system operator test for chlorides on an annual basis.

Public Interest

In reviewing an application for a new withdrawal, Ecology must consider the extent to which the proposed withdrawal would be detrimental to the public welfare. It is not necessary that the withdrawal advance the public interest, but it cannot be adverse to it. Detrimental impacts upon the public welfare include adverse environmental impacts, such as the degradation of water quality and the hydrologic conditions that sustain instream values such as fish habitat, recreation and aesthetics. It also includes increasing the potential for contamination of an aquifer, causing the movement of a contamination plume or interfering with the remediation of a contaminated waste site.

Authorizing withdrawals associated with the Steamboat Square water is in the public interest by satisfying the following criteria:

- Withdrawals will not negatively impact surface water in the area, by either degrading water quality or by capturing groundwater that would otherwise sustain baseflows in regulated surface water bodies.
- Approval of this application is consistent with water resource fundamentals of RCW 90.54 and meets the fundamentals of state water law, specifically:
 - RCW 90.54.005 – Objectives to provide water for residential needs,
 - RCW 90.54.020 – Protect stream baseflows,
 - RCW 90.54.920 – No impairment of existing water right holders.

FINDINGS AND CONCLUSIONS:

Based on the provisions of 90.03 and 90.44, in order for Ecology to approve an application for a new water right, the following criteria must be satisfied:

1. There must be water available for appropriation.
2. The water must be for a beneficial use.

3. There must be no impairment to existing rights or surface water.
4. Approval of the application will not be detrimental to the public interest.

Based on the information presented in this Report of Examination, it is determined that each element of the 4-part test has been satisfied; therefore, it is concluded that this water right application be approved.

RECOMMENDATIONS:

I recommend the issuance of a water right permit in the amount of 68 gpm and 25 ac-ft per year for domestic supply and commercial use, year round as needed, and as subject to the attached provisions.

References

- Drost, B.W., Turney, G.L., Dion, N.P., and Jones, M.A., 1999, Conceptual Model and Numerical Simulation of the Ground-Water-Flow System in the Unconsolidated Sediments of Thurston County, Washington: US Geological Survey Water Resources Investigations Report 99-4165.
- Drost, B.W., Turney, G.L., Dion, N.P., and Jones, M.A., 1998, Hydrology and Quality of Ground Water in Northern Thurston County, Washington: US Geological Survey Water-Resources Investigations Report 92-4109 (revised).
- Logan, Robert L., and Walsh, Timothy J., 2004, Geologic Map of the Summit Lake 7.5-minute Quadrangle, Thurston and Mason Counties, Washington: Washington Department of Natural Resources, Division of Geology and Earth Resources, Open File Report 2004-10.
- Semcon, Inc., 2006a, Correspondence to Tammy Hall (Ecology) dated August 28, 2006.
- Semcon, Inc., 2006b, Correspondence to Tammy Hall (Ecology) dated November 17, 2006.
- Semcon, Inc., 2007, Correspondence to Tammy Hall (Ecology) dated January 27, 2007.
- Washington Department of Health, 2001, Water System Design Manual, DOH#331-123.

